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(11) EP 0 941 937 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
15.09.1999 Bulletin 1999/37

(51) Int. Cl.<sup>6</sup>: B65D 33/25, A44B 19/26

(21) Application number: 99103782.1

(22) Date of filing: 26.02.1999

(84) Designated Contracting States:  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE  
Designated Extension States:  
AL LT LV MK RO SI

(30) Priority: 13.03.1998 JP 6366098  
13.05.1998 JP 13067398  
07.07.1998 JP 19145998  
24.11.1998 JP 33252898

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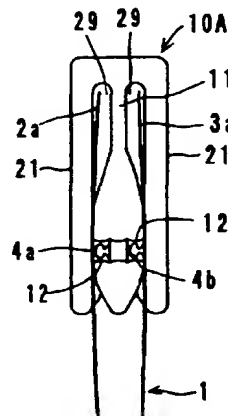
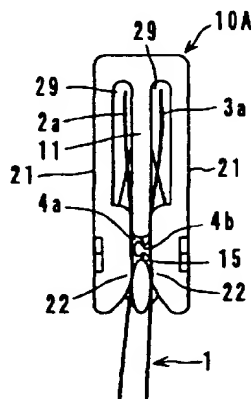
### (54) Zipper bag and a slider for opening/closing the bag

(57) A slider (10A) which has a center leg (11) and a pair of side legs (21), and a zipper bag (1) provided with the slider. The zipper bag has a zipper composed of a concave portion (4A) and a convex portion (4B) which are formed on flaps and are capable of engaging with each other. The center leg (11) of the slider works to open the zipper, and the side legs (21) of the slider work to close the zipper. Also, the slider may have a cutter portion so as to cut a sealed portion of a bag.

F I G. 3

F I G. 3 a

F I G. 3 b



EP 0 941 937 A1

## Description

### [ Technical Field ]

**[0001]** The present invention relates to a zipper bag and a slider, and more particularly to a bag which has, at the open side of the bag, a zipper composed of a concave portion and a convex portion which are capable of engaging with each other and a slider for opening and closing the zipper.

### [ Background Art ]

**[0002]** Conventionally, there have been provided various plastic zipper bags as shown by Fig. 18. A bag 1 shown by Fig. 18a has, at the top end of a front film 2 and a back film 3, a zipper 4 composed of a concave portion 4a and a convex portion 4b, and this type of bag is called top-zipper type. This top zipper is opened and closed by an opening/closing device (slider) 900 shown in Fig. 18a. A bag 1 shown by Fig. 18b has a zipper 4 composed of a concave portion 4a and a convex portion 4b which are formed integrally with the front film 2 and with the back film 3, respectively, on their inner surfaces in the upper portion. A bag 1 shown by Fig. 18c has a zipper 4 made by fixing a concave portion 4a and a convex portion 4b on the inner surfaces of the front film 2 and the back film 3, respectively, in the upper portion. The bags 1 shown by Figs. 18b, 18c and 18d are of a type which has flaps 2a and 3a of the films 2 and 3 above the zipper 4, and such a bag 1 is opened by picking the flaps 2a and 3a by fingers.

**[0003]** With respect to the bags 1 shown by Figs. 18b, 18c and 18d, in order to close the zipper 4, the concave and convex portions 4a and 4b are engaged and pushed from both sides by fingers with the fingers (see to arrows A) slid along the concave and convex portions 4a and 4b. In order to open the zipper 4, the flaps 2a and 3a are picked and pulled outward by fingers to disengage the convex and concave portions 4a and 4b from each other. Such opening/closing operations are troublesome, and a device which permits easy open/close of such a bag is demanded.

**[0004]** Recently, a type of bag 1 whose flaps 2a and 3a are cut along the alternate long and short dash line shown in Figs. 18b, 18c and 18d has been introduced into market. Cutting the flaps 2a and 3a enables the bag 1 to be opened and closed by use of the slider 900 shown by Fig. 19a. Here, this type of bag is called pseudo top-zipper type.

**[0005]** Fig. 19b shows a case that the opening/closing device (slider) 900 is fitted to the pseudo top-zipper bag 1. In this case, when the slider 900 is slid to the end to open the zipper 4, about a half of the slider 900 sticks out from the end of the bag 1, which is unstable. The following countermeasures to avoid this problem have been taken: fitting a stopper at the end of the bag 1; and forming a projection on the end of the bag 1 by welding

the end by use of a high-frequency welder and using the projection as a stopper of the slider 900. The fitting of the stopper and the partial welding have been carried out by hand. This has caused problems of increasing the number of processes and accordingly of increasing the cost. Moreover, there is fear that the user may be harmed by the projection formed to serve as a stopper, and for this reason, such bags cannot be used as bags for children's clothing and ladies' clothing. Further, this slider 900 is apt to roll as indicated by arrow "a" in Fig. 19a, and the movement of the slider 900 is not so smooth.

**[0006]** Also, the pseudo top-zipper bag shown by Figs. 18b and 18d still has short flaps 2a' and 3a' although the flaps 2a and 3a have been cut. There is a problem that the ceiling of the slider 900 rubs against these short flaps 2a' and 3a', thereby making the short flaps 2a' and 3a' wavy.

### [ Disclosure of the Invention ]

**[0007]** An object of the present invention is to provide a slider which permits easy open/close of a zipper bag and can be fitted to a bag which is a finished product easily.

**[0008]** Another object of the present invention is to provide a zipper bag which can be judged apparently to have been opened and therefore is suited to be used as an envelope for a confidential letter.

**[0009]** Further, another object of the present invention is to provide a zipper bag which has a slider and has good sealing performance.

**[0010]** Another object of the present invention is to provide a slider which can be fitted to a pseudo top-zipper bag stably and does not stick out from an end of the bag even without a stopper when the slider has opened the zipper.

**[0011]** Another object of the present invention is to provide a slider which does not deform short flaps of a pseudo top-zipper bag.

**[0012]** In order to attain the objects above, according to the present invention, a zipper bag which has a zipper composed of a concave portion and a convex portion which are provided on inner surfaces of a pair of flaps located in an opening portion of the bag and are capable of engaging with each other is provided with a slider which comprises a center leg, a pair of side legs which are located on both sides of the center leg and are connected to the center leg at their upper portions and holes which are made among the center leg and the side legs and the flaps are to come through. This slider is fitted to the opening portion of the bag in such a way that the center leg is inserted between the concave portion and the convex portion of the zipper and that the side legs extend over the flaps and press the concave portion and the convex portion, and the slider opens and closes the zipper by sliding along the zipper.

**[0013]** In this structure, when the slider is slid in a

direction, the center leg comes between the concave portion and the convex portion of the zipper and separates them from each other. Thereby, the zipper is opened. When the slider is slid in the opposite direction, the pair of side legs press the concave portion and the convex portion of the zipper from both sides to make the concave portion and the convex portion come into engagement with each other. Thereby, the zipper is closed. Thus, according to the present invention, a flap type zipper bag can be opened and closed easily, merely by sliding a slider.

[0014] Also, the center leg of the slider may have a cutter portion on a side facing a zipper opening direction. If the flaps of the bag are fused together or if a seal is provided on the opening of the bag, when the slider is moved for the first time, the cutter portion cuts the fused portion of the flaps or the seal. Thus, it can be apparently judged whether or not such a bag has been opened, and such a bag is suited to be used as an envelope for a confidential letter.

[0015] Moreover, it is possible to make the bag as a closing type. The slider is fitted to bases of the zipper, and the front film and the back film of the bag are extended upward and fused together above the slider. In this case, the bases of the zipper are fused to the front film and the back film only at their lower portions.

[0016] Further, preferably, the center leg of the slider has a projection at its lower part. This projection is in contact with the lower surface of the engaged concave and convex portions of the zipper of a pseudo top-zipper bag. Thereby, the fitting state of the slider to the zipper becomes stable, and rolling of the slider can be prevented. Also, when the slider has opened the bag and reached the end of the bag, the projection comes into contact with the end of the bag, whereby further movement of the slider can be prevented. Thus, even without providing a stopper, the trouble that a half of the slider sticks out from the end of the bag can be avoided. Consequently, the work to fit a stopper or to form a stopper portion by use of a welder is no longer necessary.

[0017] Furthermore, it is preferred that the center leg of the slider has a bulged portion. This bulged portion or the projection is in contact with the lower surface of the zipper, and thereby, the slider is prevented from coming off. This slider can be fitted to a bag which is a finished product by inserting the center leg between the concave portion and the convex portion of the zipper, and thus, this type of sliders are suited to be fitted to bags which are mass-produced by fusion-cutting.

[0018] It is also preferred that projections which protrude from the ceiling of the slider and face the upper surface of the zipper are formed on the connecting portion between the center leg and the side legs. These projections serve as spacers, and the trouble that the ceiling of the slider rubs against short flaps and makes the short flaps wavy is prevented. Also, with this arrangement, the friction between the slider and the flaps becomes small, and the smoothness of movement

of the slider is improved.

#### [ Brief Description of the Drawings ]

[0019] These and other objects and features of the present invention will be apparent from the following description with reference to the accompanying drawings, in which:

Figs. 1a and 1b show a zipper bag according to the present invention, Fig. 1a being a perspective view of the bag and Fig. 1b being an enlarged sectional view of a zipper part of the bag;

Figs. 2a through 2f show a slider which is a first embodiment of the present invention, Fig. 2a being a front view of the slider, Fig. 2b being a side view of the slider viewed from a zipper closing side, Fig. 2c being a side view of the slider viewed from a zipper opening side, Fig. 2d being a bottom view of the slider, Fig. 2e being a front view of a center leg of the slider and Fig. 2f being a sectional view of a side leg of the slider;

Figs. 3a and 3b show a state in which the slider is fitted to a bag, Fig. 3a being a side view of the slider viewed from the zipper closing side and Fig. 3b being a side view of the slider viewed from the zipper opening side;

Fig. 4 is a side view of a slider which is a second embodiment of the present invention;

Figs. 5a through 5d show a slider which is a third embodiment of the present invention, Fig. 5a being a side view of the slider viewed from a zipper closing side, Fig. 5b being a sectional view of the slider taken along the line Vb-Vb in Fig. 5a, Fig. 5c being a front view of a center leg of the slider and Fig. 5d being a front view of a side leg of the slider;

Fig. 6 is a perspective view which shows a way of automatically fitting sliders to zipper bags during producing zipper bags;

Figs. 7a and 7b show a zipper bag with temporary fixing means, Fig. 7a being a perspective view of the bag and Fig. 7b being an enlarged sectional view of a zipper part of the bag;

Fig. 8 is a front view of a zipper bag with another temporary fixing means;

Figs. 9a through 9c show a slider with a cutter portion, Fig. 9a being a bottom view of the slider, Fig. 9b being a front view of a center leg of the slider and Fig. 9c being a sectional view of the center leg taken along the line IXc-IXc in Fig. 9b;

Figs. 10a and 10b show a sealing type zipper bag, Fig. 10a being a front view of the bag and Fig. 10b being a sectional view of the bag taken along the line Xb-Xb in Fig. 10a;

Fig. 11 is a front view of a sealing/closing type zipper bag;

Fig. 12 is a sectional view of a closing type zipper bag;

Figs. 13a through 13d show another slider according to the present invention, Fig. 13a being a side view of the slider viewed from a zipper opening side, Fig. 13b being a side view of the slider viewed from a zipper closing side, Fig. 13c being a sectional view of the slider taken along the line XIIIc-XIIIc in Fig. 13a and Fig. 13d being a sectional view of the slider taken along the line XIIId-XIII d in Fig. 13a;

Fig. 14 is a front view of the slider;

Fig. 15 is a partial sectional view of a center leg of the slider;

Fig. 16 is a bottom view of the slider;

Figs. 17a and 17b show a state in which the slider is fitted to a zipper bag, Fig. 17a being a side view of the slider viewed from the zipper opening side and Fig. 17b being a side view viewed from the zipper closing side;

Figs. 18a through 18d show zipper bags of prior art, Fig. 18a showing a top-zipper type, Figs. 18b and 18c showing a flap type and Fig. 18d showing a pseudo top-zipper type; and

Figs. 19a and 19b show a zipper bag with a slider of prior art, Fig. 19a being a perspective view and Fig. 19b being a front view.

#### [ Best Mode for Carrying out the Invention ]

**[0020]** Some exemplary sliders for opening and closing zipper bags are described with reference to the accompanying drawings.

**[0021]** Fig. 1 shows a zipper bag 1 to which a slider according to the present invention is fitted. The bag 1 is a conventional one made by fusion-cutting or by fusing and cutting.

**[0022]** The slider 10A is made integrally by injection of resin. Fig. 2 shows the first embodiment 10A of such a slider, and this slider has a center leg 11 and a pair of side legs 21. The center leg 11 and the side legs 21 are connected to one another at their upper sides, and holes 29 in which flaps 2a and 3a of the bag 1 can go through are formed. The center leg 11 has grooves 12 on both sides in the middle portion, and a concave portion 4a and a convex portion 4b of a zipper 4 are capable of coming into the grooves 12 respectively. Further, above and below the grooves 12, the center leg 11 has bulged portions 13 and 14. Moreover, as shown in Fig. 2e, a cut-out 15 is made on a side facing the zipper opening direction.

**[0023]** The side legs 21 sandwich the center leg 11 from both sides, and bulged portions 22 are made on the side legs 21 opposite the cut-out 15 of the center leg 11.

**[0024]** The slider 10A of the above-described structure is fitted to the bag 1 by using its own flexibility in the following way: while the zipper 4 is opened, the center leg 11 is inserted between the flaps 2a and 3a; and the bulged portion 14 is made overcome the concave and

the convex portions 4a and 4b (see Figs. 3a and 3b). As shown in Fig. 3a, the part of the concave portion 4a and the part of the convex portion 4b which have come into the cut-out 15 at that time are pressed by the bulged portions 22 and engage with each other. Also, as shown in Fig. 3b, the part of the concave portion 4a and the part of the convex portion 4b which have come into the grooves 12 are separated by the center leg 11 and stay in the spaces among the center leg 11 and the side legs 21. The flaps 2a and 3a are in the holes 29.

**[0025]** The slider 10A which have been fitted to the bag 1 in this way does not come off upward because the concave and convex portions 4a and 4b are in the grooves 12 and the cut-out 15 and are sandwiched by the side legs 21 from both sides. It is possible to detach the slider 10A from the bag 1 by pulling the side legs 21 outward. However, as long as such deformation is not made, merely pulling the slider 10A upward does not cause the slider 10A to come off.

**[0026]** Next, the opening/closing operations by use of the slider 10A are described.

**[0027]** When the slider 10A is slid in a direction in which the side of the grooves 12 leads (see Fig. 2e), the concave portion 4a and the convex portion 4b come into the cut-out 15 and engage with each other. Thereby, the zipper 4 is closed. When the slider 10A is slid in the opposite direction, the concave portion 4a and the convex portion 4b are separated from each other by the center leg 11, and more particularly by a partition wall 12a of the grooves 12 (see Fig. 2e). Thereby, the zipper 4 is opened.

**[0028]** Further, in order to make more excellent performance, the slider 10A adopts the following construction.

**[0029]** On the outer surface of one of the side legs 21, a slightly recessed triangle mark 23 is given (see Fig. 2a). This mark 23 indicates that a slide of the slider 10A in the direction shown by the vertex of the triangle results in closing the zipper 4. Such a mark may be provided on the slider 10A by printing or the like.

**[0030]** The center leg 11 and the side legs 21 are tapered, and all the corners are rounded off. These arrangements are for easy fitting to the bag 1 and for smooth sliding. For the same purpose, the bulged portion 14 is tapered downward.

**[0031]** At least one of the bulged portions 13 and 14 which are located above and below the grooves 12 may be formed on the inner surfaces of the side legs 21, not on the center leg 11. Fig. 4 shows the second embodiment 10B in which bulged portions 13' are provided on the inner surfaces of the side legs 21 instead of the bulged portion 13 of the center leg 11.

**[0032]** Fig. 5 shows the third embodiment 10C. The structure is basically the same as those of the first and second embodiments. The same members and parts are provided with the same reference symbols as used in the first and second embodiments.

**[0033]** This slider 10C has neither the bulged portions

13, 14, 22 nor the grooves 12 of the first embodiment. The center leg 11 of the slider 10C has a separating portion 12a which separates the concave portion 4a and the convex portion 4b of the zipper 4 from each other and a cut-out 15 extending from the separating portion 12a to the zipper opening side of the slider 10C. Each of the side legs 21 of the slider 10C has a pressing portion 24 opposite the cut-out 15 and a relieving portion (cut-out) 25 opposite the separating portion 12a.

[0034] The concave portion 4a and the convex portion 4b which have come into the cut-out 15 are pressed by the pressing portions 24 and engage with each other. Also, the concave portion 4a and the convex portion 4b are separated from each other by the separating portion 12a of the center leg 11. The relieving portions 25 are to push the separated concave and convex portions 4a and 4b backward smoothly. The relieving portions 25 are not necessarily cut-outs but may be recesses.

[0035] The above-described three kinds of sliders 10A, 10B and 10C are designed in the premise that they are fitted to bags which are finished products. However, the sliders 10A and 10B of the first and second embodiments can be automatically fitted to bags under production and can be introduced into market as bags with a slider.

[0036] Fig. 6 is a schematic view of a process of automatically fitting sliders 10A to bags under production. Sliders 10A are stored one upon another in a vertical hopper 30, and when a rod 31 is moved forward in a direction of arrow "C", the slider 10A on the bottom is pushed out of the hopper 30. Bags are produced by a conventional method (for example, by fusing). In the processes before, a wide film 1' was folded in two, and a zipper 4 is fused. Then, the two-folded film 1' is transported to the hopper 30 (fitting station X<sub>1</sub>). At the station X<sub>1</sub>, the zipper 4 is opened by a separator 32, and a slider 10A is fitted. In the next process, a bag 1 is cut off from the film 1' at a fusion-cutting station X<sub>2</sub>. At the pitch of cutting, the rod 31 is moved to fit sliders 10A to zippers 4.

[0037] Next, temporary fixation of the slider 10A at the closing position is described.

[0038] The slider 10A is capable of sliding easily so as to open and close the zipper 4. However, if the slider 10A slides from the closing position too easily, the bag 1 will be opened unnecessarily. In order to avoid such trouble, as shown in Fig. 7, the front and back films of the bag 1 are fused together at a place 5 in the opening portion 7 right under the zipper 4.

[0039] As shown in Fig. 7a, three sides (shadowed portions) of the bag 1 are fused, and further, the portion 5 is fused. When the slider 10A completely closes the zipper 4, the lower part of the center leg 11 of the slider 10A is in contact with the fused portion 5 and is pressed by the fused portion 5. This pressure works as resistance to a slide of the slider 10A in the direction to open the bag 1, and thus, the slider 10A is temporarily fixed in the closing position. This fixing force is not so strong,

and when the slider 10A is picked by fingers and is slid in the direction to open the bag 1, the center leg 11 separates from the fused portion 5.

[0040] Various ways of providing resistance to a slide of the slider 10A are possible as well as the fused portion 5. For example, as shown in Fig. 8, the front and back films of the bag 1 may be fused together in a spot 6.

[0041] As shown in Fig. 9, it is possible to provide a cutter portion 16 to the slider. Fig. 9a corresponds to Fig. 2d, and Fig. 9b corresponds to Fig. 2e. Fig. 9c is a view obtained by cutting the slider along the line IXc-IXc in Fig. 9b. The slider 10A' shown in Fig. 9 is slightly different from the slider 10A shown in Fig. 2 in shape. However, the slider 10A' is basically the same as the slider 10A except having a cutter portion 16.

[0042] This slider 10A' is used in embodiments shown by Figs. 10 and 11. The bag 1 shown by Fig. 10 has a seal 8 between the flaps 2a and 3a. When the slider 10A' is slid to the right in Fig. 10a to open the zipper 4, the cutter portion 16 cuts the center portion of the seal 8 (the portion indicated with arrow "C" in Fig. 10b). Because the cutter portion 16 of the slider 10A' is sandwiched between the side legs 21, the cutter portion 16 never harms the user and is safe.

[0043] Since the bag 1 shown by Fig. 10 is apparently judged whether or not it has been opened, it is suited to be used as an envelope of a confidential letter. Further, the lower side 1a of the bag 1 is opened so that a letter or the like can be put into the bag 1, and after putting things into the bag 1, the lower side 1a is closed, for example, by fusing. The seal 8 may be a cellophane adhesive tape.

[0044] Fig. 11 shows an embodiment of a closing type bag 1 with a seal 9.

[0045] In this embodiment, two sheets of sealing material are laid on the outer surfaces of the flaps 2a and 3a, respectively, and the two sheets are fused together on the whole peripheral sides as shown by the shadowed portions. The two sealing sheets are fused together at the sides 9b and 9c and fused with the front and back films of the bag 1 at the sides 9a, 9d and 9e. A cut is formed at a portion indicated with arrow "D", and when the bag 1 is opened, first, the side 9b is taken off by use of the cut. Thereby, the slider 10A' appears. Next, when the slider 10A' is slid in a direction to open the zipper 4, the cutter 16 cuts the side 9c of the seal 9. Thus, the bag 1 shown by Fig. 11 has a closing function as well as a sealing function.

[0046] Further, the zipper bags shown by Figs. 10 and 11 can be modified in various ways.

[0047] For example, with respect to the bag 1 shown by Fig. 10, instead of providing a seal 8 or a cellophane adhesive tape, the flaps 2a and 3a may be fused together so that the cutter portion 16 will cut the fused portion when opening the bag 1. With respect to the bag 1 shown by Fig. 11, if the flaps 2a and 3a are fused together, the seal 9 may be provided to cover only the

slider 10A'. Further, such a bag may be provided with a fused portion 5 or 6 for temporarily fixing the slider 10A' in the closing position.

**[0048]** Next, another embodiment of a closing type zipper bag 100 is described. As shown in Fig. 12, the bases 4c of the zipper 4 is fused to the front film 2 and the back film 3 of the bag 1 only at their lower parts  $Y_1$ , and the slider 10A is fitted to the bases 4c of the zipper 4. The front film 2 and the back film 3 of the bag 1 extend upward covering the slider 10A and form an opening side 7.

**[0049]** After things are put into the bag 1, the zipper 4 is closed by use of the slider 10A, and the upper parts  $Y_2$  of the front film 2 and the back film 3 are fused together from one end to the other end. Thus, the front and back films of the bag cover the slider 10A and are fused together at their upper portions  $Y_2$ . With this arrangement, although the slider 10A is fitted, the bag 1 can be sealed firmly, and the bag 1 is suited to be stored with food. In order to open the bag 1, the user cuts off the upper portion  $Y_2$  with scissors. Preferably, if half-cut processing or the like is carried out so that the films 2 and 3 can be cut in a direction right above the fused portion  $Y_1$ , the bag can be opened by hand easily. Once the bag 1 is opened in this way, the bag 1 can be used as a zipper bag with a slider in the above-described way.

**[0050]** Further, it is possible to fuse the upper portion  $Y_2$  beforehand. In this case, the lower side (not shown in Fig. 12) of the bag 1 is not fused and stays open. After things are put into the bag 1 through the open lower side, the lower side is sealed.

**[0051]** Fig. 13 shows another embodiment of a slider according to the present invention. This slider 310 is made integrally by injection of resin. The slider 310 is composed of a center leg 311 and a pair of side legs 321, and these legs 311 and 321 are connected to one another at their upper parts.

**[0052]** The slider 310 is used for a zipper bag which is of a pseudo top-zipper type 1 shown by Fig. 18d. This zipper bag has a zipper 4 composed of a concave portion 4a and convex portion 4b at the upper opening, on the inner surfaces of the front film 2 and the back film 3.

**[0053]** The structure of the slider 310 is described in detail. The center leg 311 has a separation wall 312 which separates the concave portion 4a and the convex portion 4b of the zipper 4 from each other, a cut-out 313 wherein the concave portion 4a and the convex portion 4b come into engagement with each other and a bulged portion 314 which is made under the separation wall 312 (see to Fig. 15). Each of the side legs 321 has a recessed portion 322 opposite the separation wall 312 and a pressing portion 323 opposite the cut-out 313. Further, the center leg 311 has a projection 315 which protrudes from the bulged portion 314 and extends under the cut-out 313.

**[0054]** The slider 310 of the above-described structure is fitted to the bag 1 by use of its own flexibility in the following way: while the bag 1 is opened, the center leg

311 is inserted between the concave portion 4a and the convex portion 4b of the zipper 4; and the side legs 312 are placed outside the front film 2 and the back film 3 (see Fig. 17). At this time, as shown in Fig. 17a, part of the concave portion 4a and part of the convex portion 4b are separated from each other by the separation wall 312. Also, as shown in Fig. 17b, part of the concave portion 4a and part of the convex portion 4b which have come into the cut-out 313 at this time are pressed inward by the pressing portions 323 and come into engagement with each other. The bulged portion 314 and the projection 315 are located under the zipper 4.

**[0055]** Once this slider 310 is fitted to the bag 1 in this way, the slider 310 will never come off because the bulged portion 314 and the projection 315 are in contact with the lower surface of the zipper 4. Also, rolling indicated with arrow "a" in Fig. 19a will never occur.

**[0056]** Now, the opening/closing operations of the zipper 4 by use of the slider 310 are described.

**[0057]** When the slider 310 is slid in the "closing" direction shown in Figs. 13d and 15, the concave portion 4a and the convex portion 4b are pressed into the cut-out 313 by the pressing portions 323 and come into engagement with each other. Thereby, the zipper 4 is closed (see Fig. 17b). When the slider 310 is slid in the opposite direction ("opening" direction shown in Figs. 13d and 15), the concave portion 4a and the convex portion 4b are separated from each other by the separation wall 312. Thereby, the zipper 4 is opened (see Fig. 17a). When the zipper 4 is opened in this way, the slider 310 is positioned at a corner of the bag 1; however, because the projection 315 of the center leg 311 is in contact with the end of the bag 1, trouble as shown by Fig. 19b that the slider 900 sticks out from the end of the bag 1 will never occur.

**[0058]** Further, the slider 310 has projections 316 and 317 on the ceiling connecting the center leg 311 and the side legs 312 to one another. The projections 316 and 317 face the upper surface of the zipper 4 (see Fig. 17) and serve as spacers which prevent the upper portions 2a' and 3a' of the front and back films 2 and 3 of the bag 1 from coming into contact with the ceiling of the slider 310. With this arrangement, it is avoided that the upper portions 2a' and 3a' will become wavy.

**[0059]** Further, the slider 310 can be fitted to a bag 1 as a finished product easily by inserting the center leg 311 between the concave portion 4a and the convex portion 4b of the zipper 4. This means that sliders 310 can be fitted to bags mass-produced by fusion-cutting, and there is wide usage of the slider 310. Once the slider 310 is fitted to a bag, the slider 310 will never come off because the bulged portion 314 and the projection 315 are in contact with the lower surface of the zipper 4.

**[0060]** Zipper bags and sliders according to the present invention are not limited to the above-described embodiments.

**[0061]** With respect to the sliders, the open angle of

the side legs, the shapes of the grooves and the bulged portions may be changed in any way as long as the objects of the present invention can be attained. Also, the bags may be of a large type such as handbags.

[0062] Further, the sliders are not necessarily of an integral construction. It is possible to assemble a slider from some parts (a center leg and side legs) when the slider is fitted to a bag.

[0063] Although the present invention has been described in connection with the preferred embodiments above, it is to be noted that various changes and modifications are possible to those who are skilled in the art. Such changes and modifications are to be understood as being within the scope of the present invention.

### Claims

1. A slider (10A) for opening and closing a zipper bag (1) which has a zipper (4) composed of a concave portion (4a) and a convex portion (4b) which are provided on inner surfaces of a pair of flaps (2a, 3a) located in an opening portion of the bag (1) and are capable of engaging with each other, said slider (10A) comprising:

a center leg (11); and  
a pair of side legs (21) located on both sides of the center leg (11);

wherein:

the center leg (11) has, on both sides in a middle portion, grooves (12) which the concave portion (4a) and the convex portion (4b) of the zipper (4) are to come in, respectively, has bulged portions (13, 14) above and below the grooves (12), and has a cut-out (15) in a zipper opening side of the grooves (12);

each of the side legs (21) has a bulged portion (22) opposite the cut-out (15) of the center leg (11); and

the center leg (11) and the side legs (21) are connected to one another at their upper portions in such a way to make holes (29) which the flaps (2a, 3a) of the bag (1) come through.

2. A slider (10B) as claimed in claim 1, wherein at least one of the bulged portions (13, 14) of the center leg (11) is omitted, and instead, at least one bulged portion (13') is further formed on an inner surface of each of the side legs (21).
3. A slider (310) for opening and closing a zipper bag (1) which has a zipper (4) composed of a pair of concave portion (4a) and a convex portion (4b) which are provided on inner surfaces in an upper opening portion of the bag (1) and are capable of engaging with each other, said slider (310) comprising:

a center leg (311); and

a pair of side legs (321) which are located on both sides of the center leg (311) and are connected to the center leg (311) at their upper portions;

wherein:

the center leg (311) has a separation wall (312) which separates the concave portion (4a) and the convex portion (4b) of the zipper (4) from each other, a cut-out (313) wherein the concave portion (4a) and the convex portion (4b) come into engagement with each other, a bulged portion (314) under the separation wall (312) and a projection (315) which protrudes from the bulged portion (314) and extends under the cut-out (313); and

each of the side legs (321) has a recess (322) opposite the separation wall (312) of the center leg (311) and a pressing portion (323) opposite the cut-out (313) of the center leg (311).

4. A slider (310) as claimed in claim 3, wherein a projection (316, 317) is formed on the connecting portion between the center leg (311) and the side legs (321) in such a way to face an upper surface of the zipper (4).

5. A zipper bag (1) which has a zipper (4) composed of a concave portion (4a) and a convex portion (4b) which are provided on inner surfaces of a pair of flaps (2a, 3a) in an opening portion of a bag body and are capable of engaging with each other, said zipper bag (1) comprising:

a slider (10A) for opening and closing the zipper (4), said slider (10A) comprising:

a center leg (11);

a pair of side legs (21) which are located on both sides of the center leg (11) and are connected to the center leg (11) at their upper portions; and

holes (29) which are made among the center leg (11) and the side legs (21) and the flaps (2a, 3a) are to come through;

wherein:

the slider (10A) is fitted to the bag body at the opening portion in such a way that the center leg (11) is inserted between the concave portion (4a) and the convex portion (4b) of the zipper (4) and that the side legs (21) extend over the flaps (2a, 3a) and press the concave portion (4a) and the convex portion (4b); and the slider (10A) opens and closes the zipper (4) by sliding along the zipper (4).

6. A zipper bag (1) as claimed in claim 5, wherein the

center leg (11) has a cutter portion (16) on a side facing a zipper opening direction.

7. A zipper bag (1) comprising:

a bag body which is composed of a front film (2) and a back film (3) and has an upper open side;

a zipper (4) which is provided near the open side of the bag body by forming a concave portion (4a) and a convex portion (4b) which are capable of engaging with each other on bases, respectively, and fusing lower portions (Y<sub>1</sub>) of the bases (4c) with the front film (2) and the back film (3); and

a slider (10A) which comprises a center leg (11) and a pair of side legs (21) which are connected to one another at their upper portions in such a way that the center leg (11) is located between the side legs (21) and is fitted to the bag body in such a way that the center leg (11) is between the concave portion (4a) and the convex portion (4b) of the zipper (4) and that the side legs (21) are inserted between the front film (2) and the base (4c) and between the back film (3) and the base (4c) to press the concave portion (4a) and the convex portion (4b) through the bases (4c), said slider (10A) opening and closing the zipper (4) by sliding along the zipper (4);

wherein, the front film (2) and the back film (3) are extended upward so that the front film (2) and the back film (3) can be fused together at their upper portions above the slider (10A).

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FIG. 1

FIG. 1 a

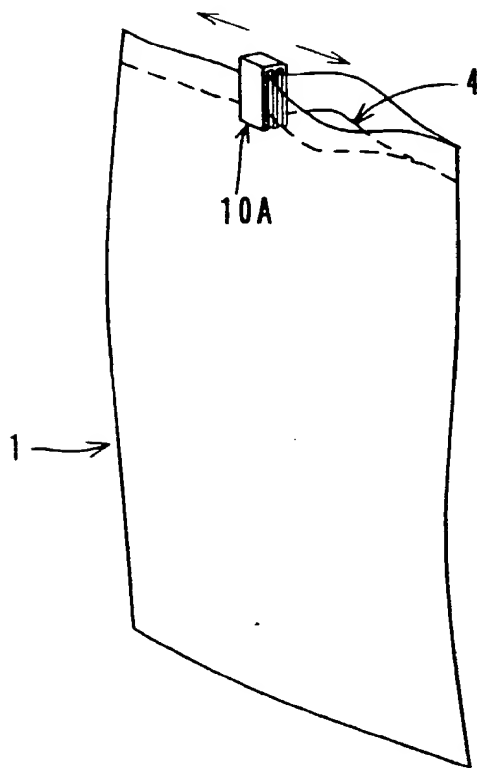
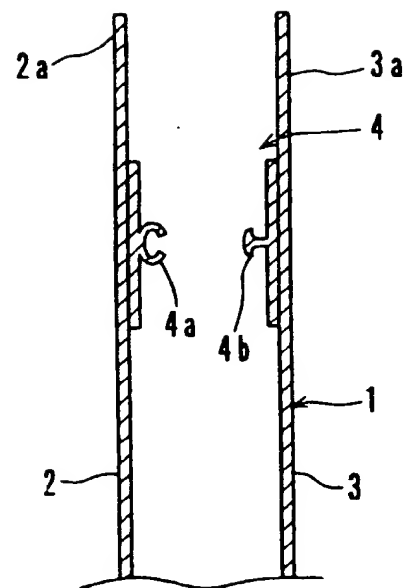
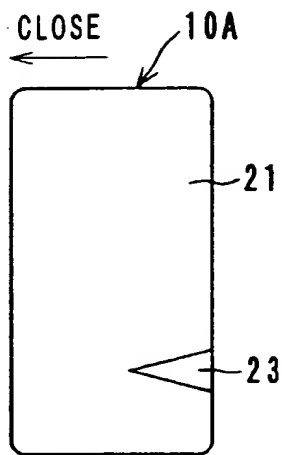


FIG. 1 b

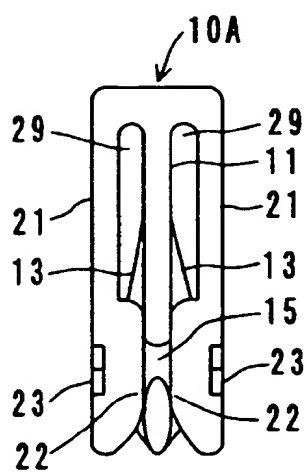


*F I G. 2*

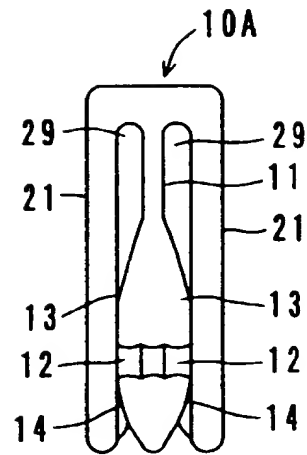
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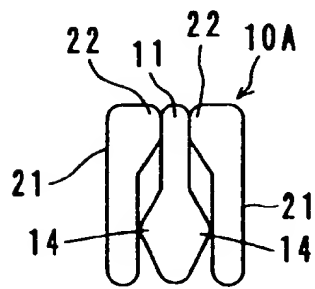
*F I G. 2 b*



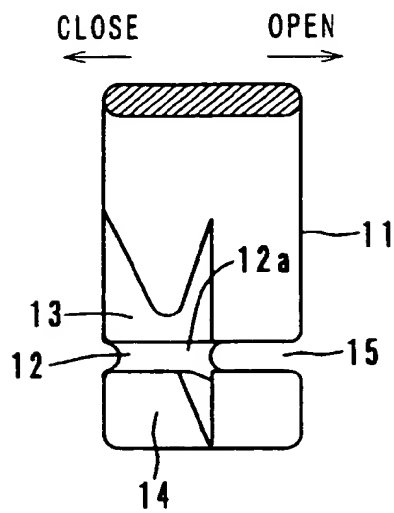
*F I G. 2 c*



*F I G. 2 d*



*F I G. 2 e*



*F I G. 2 f*

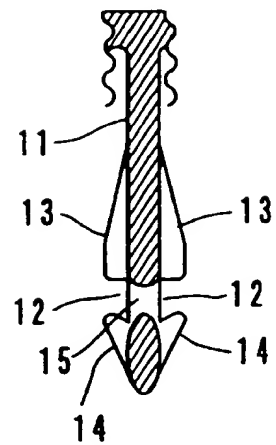


FIG. 3

FIG. 3a

FIG. 3b

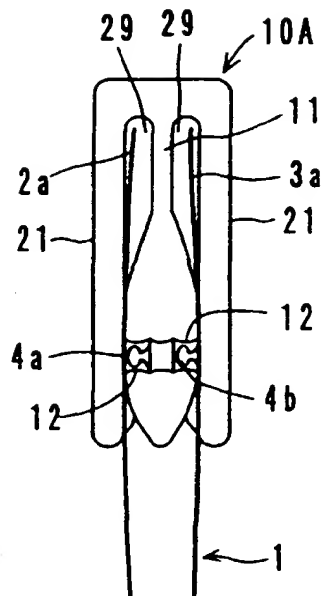
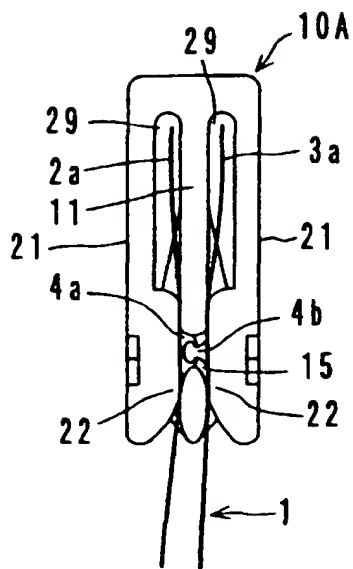
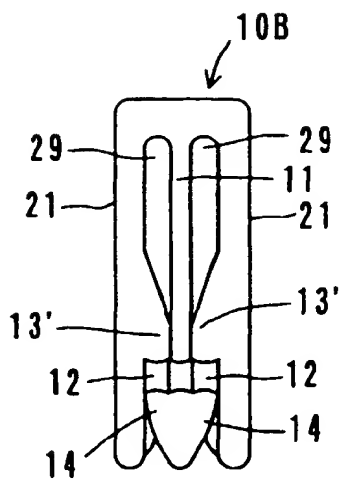
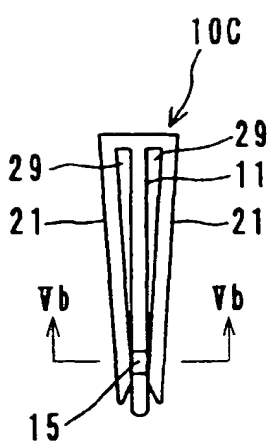


FIG. 4

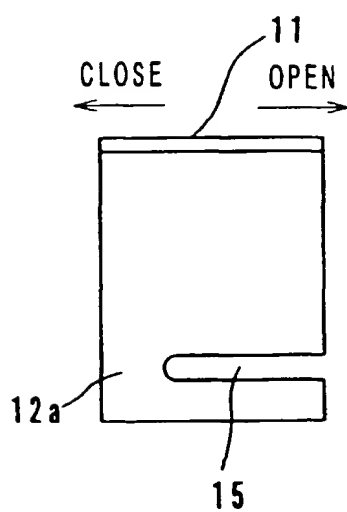


*F I G . 5*

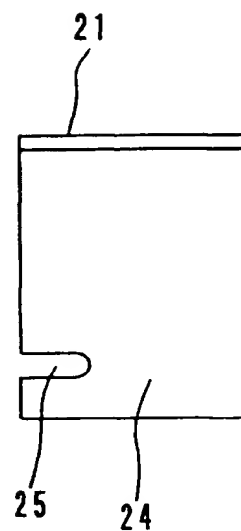
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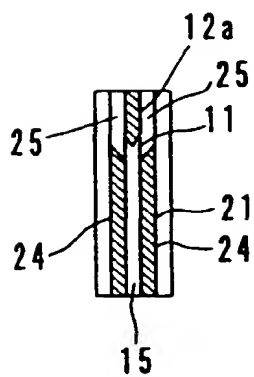
*F I G . 5 c*



*F I G . 5 d*



*F I G . 5 b*



*F / G. 6*

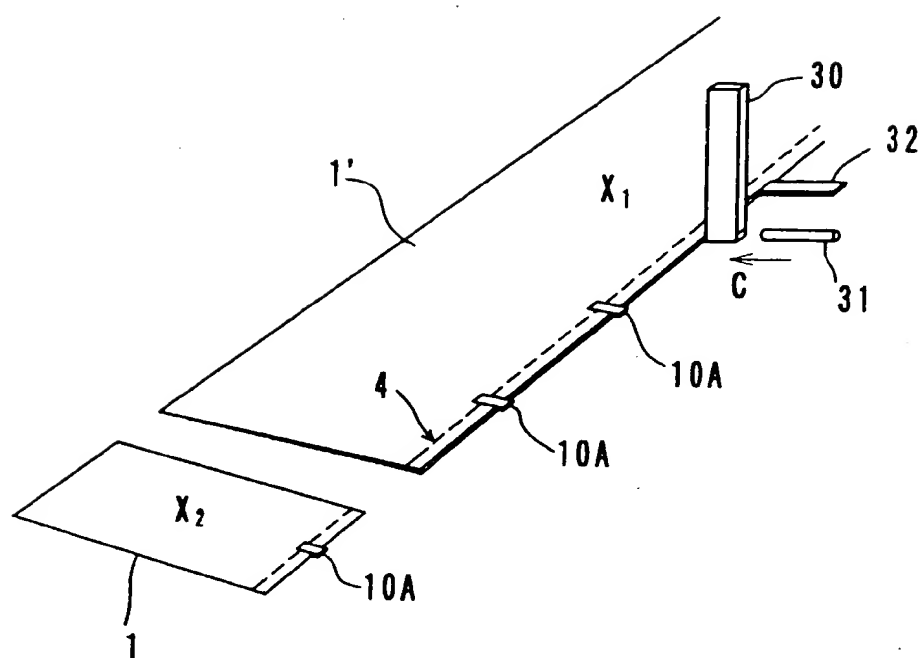


FIG. 7

FIG. 7a

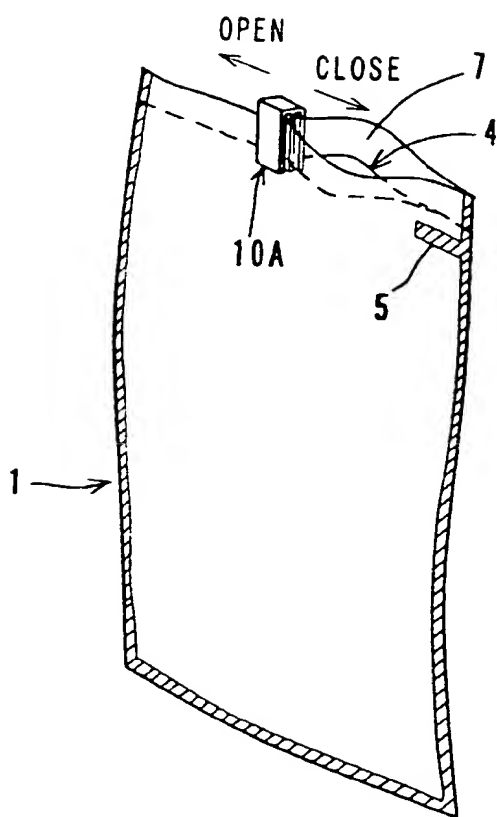
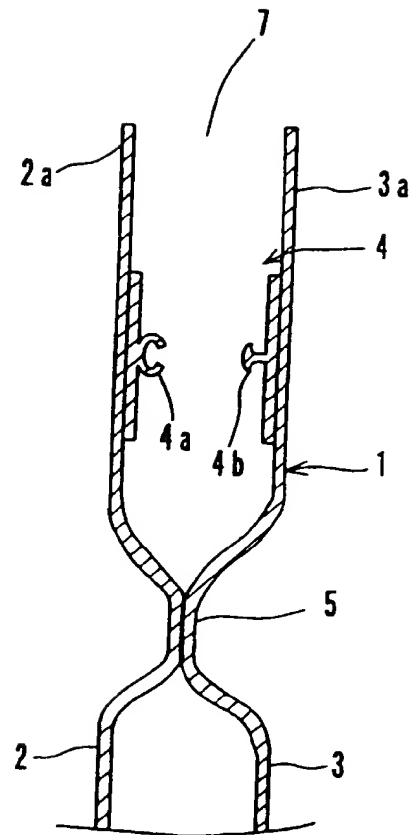
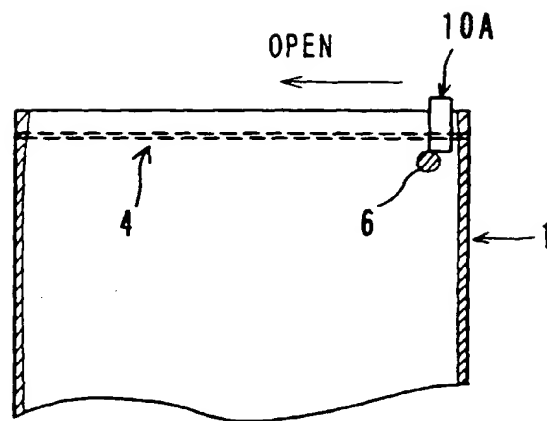


FIG. 7b

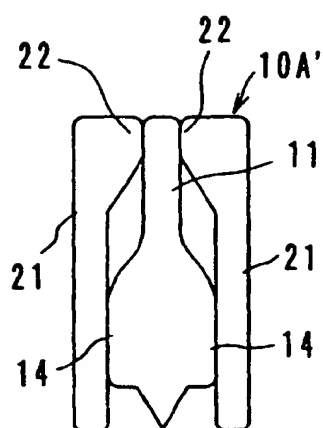


*F I G. 8*

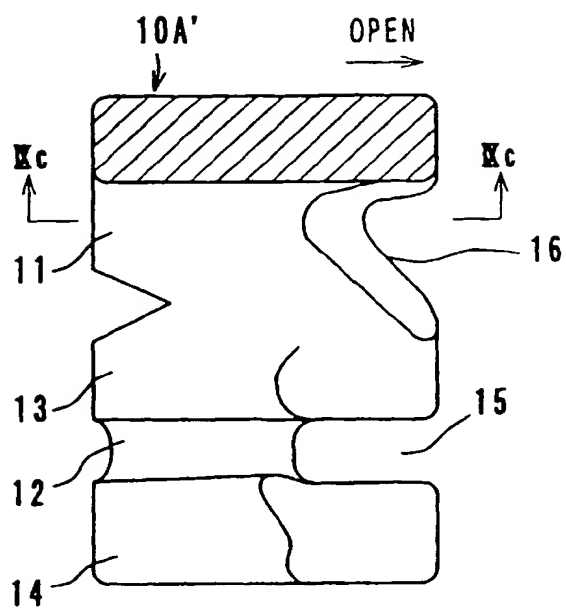


*F I G . 9*

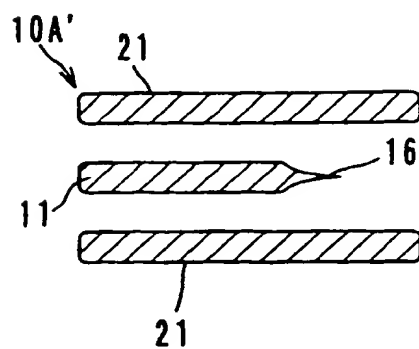
*F I G . 9 a*



*F I G . 9 b*



*F I G . 9 c*

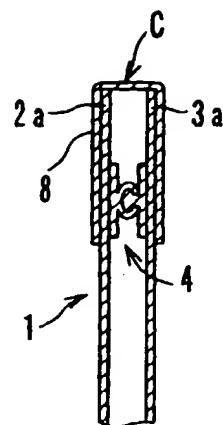
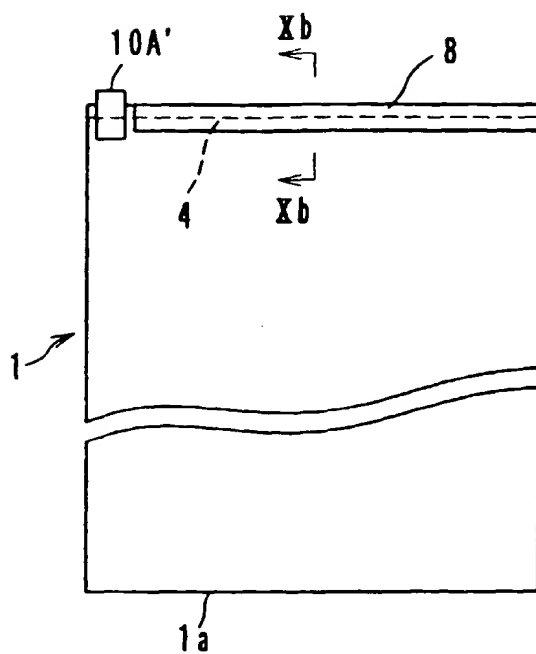




*F / G. 10*

*F / G. 10 a*

F I G. 10 b



*F / G. 1 1*

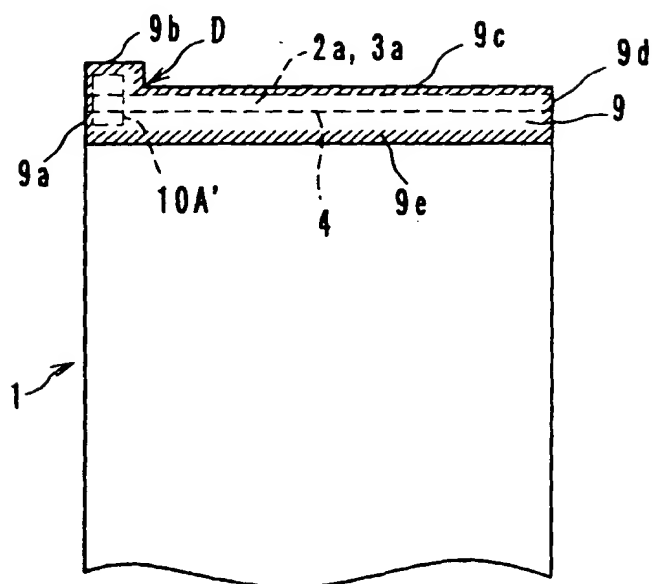


FIG. 12

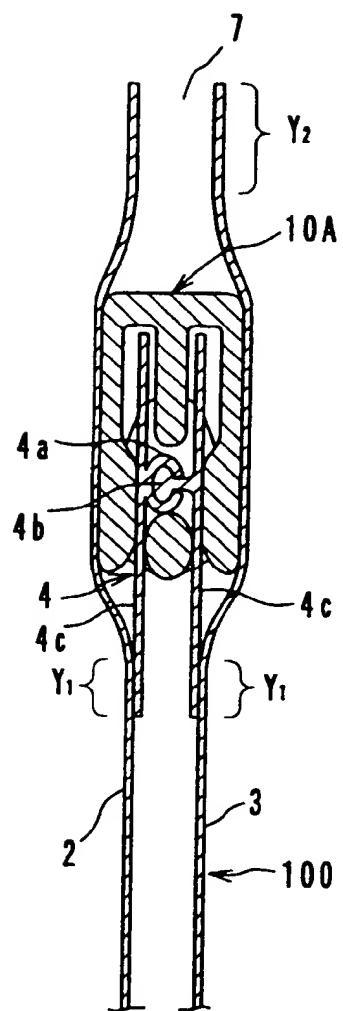


FIG. 13

FIG. 13 a

FIG. 13 b

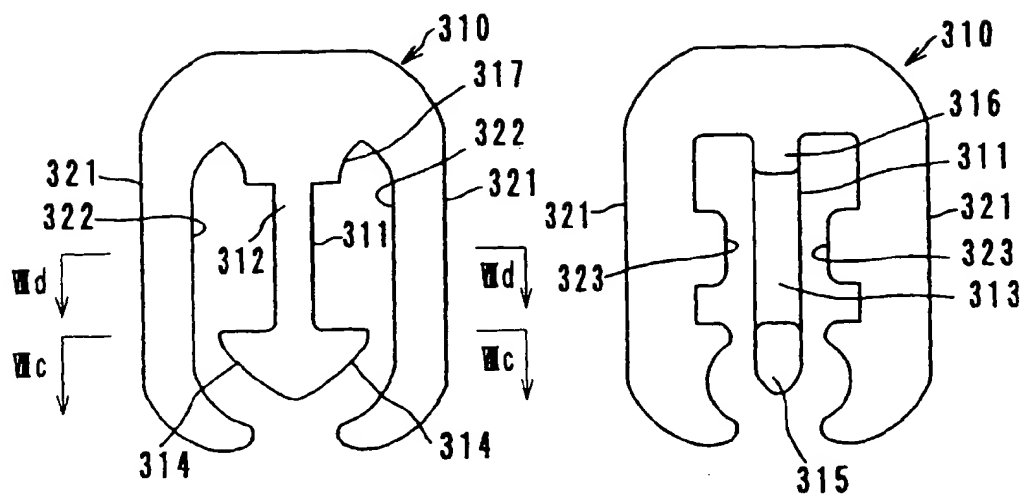


FIG. 13 c

FIG. 13 d

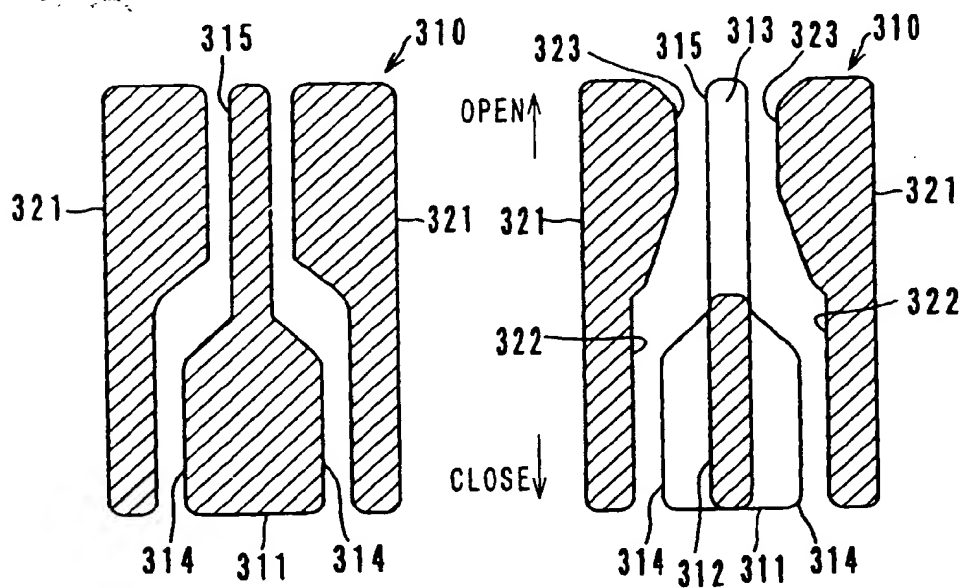


FIG. 14

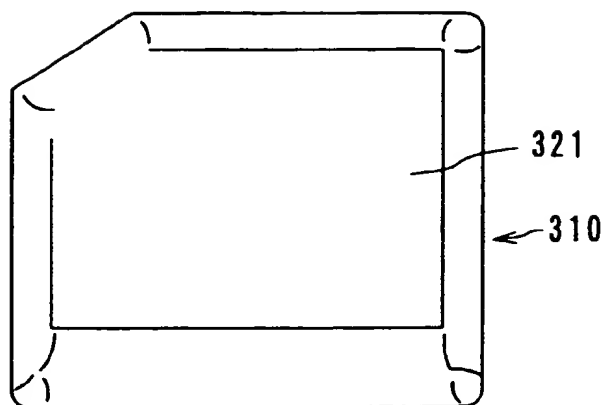


FIG. 15

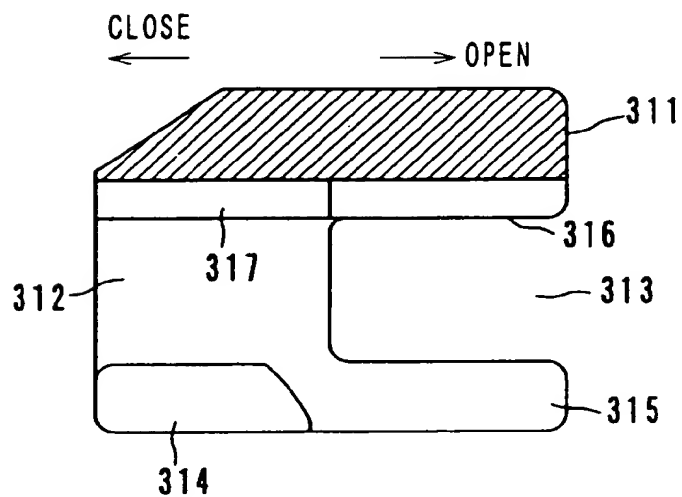


FIG. 16

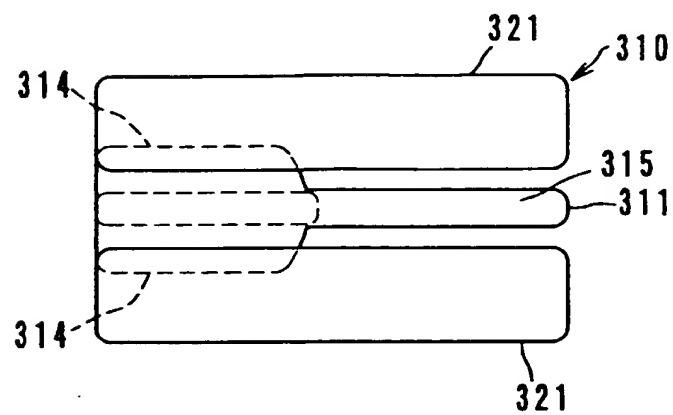


FIG. 17

FIG. 17 a

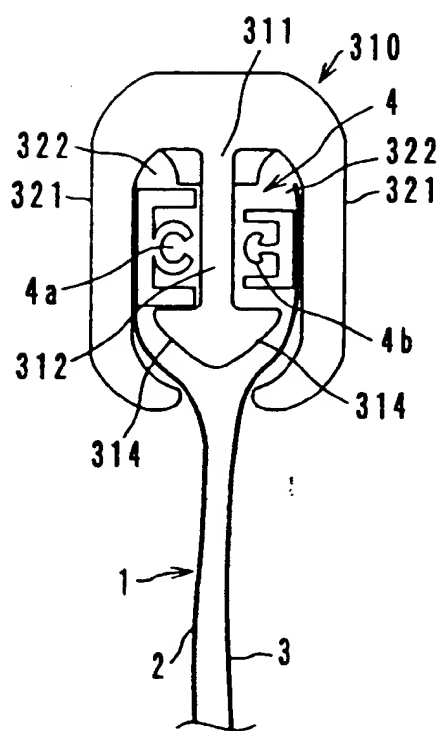
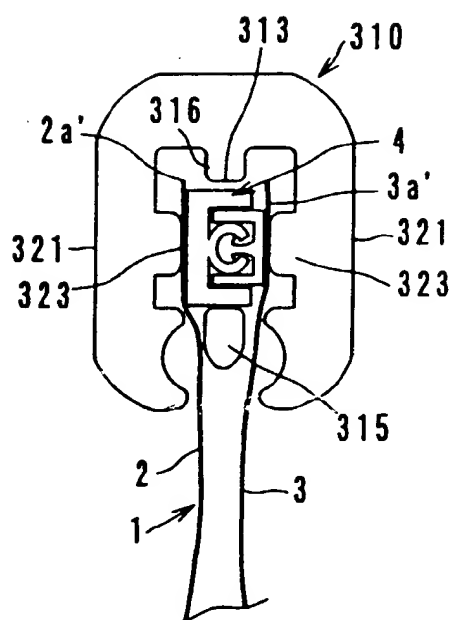
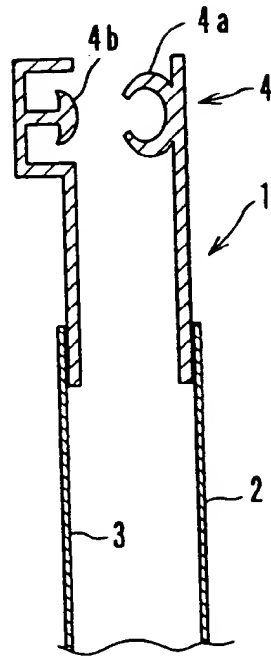


FIG. 17 b

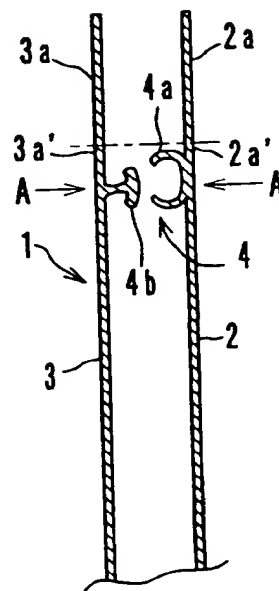


*FIG. 18*  
*PRIOR ART*

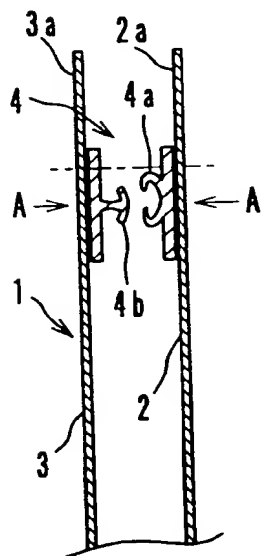
*FIG. 18 a*



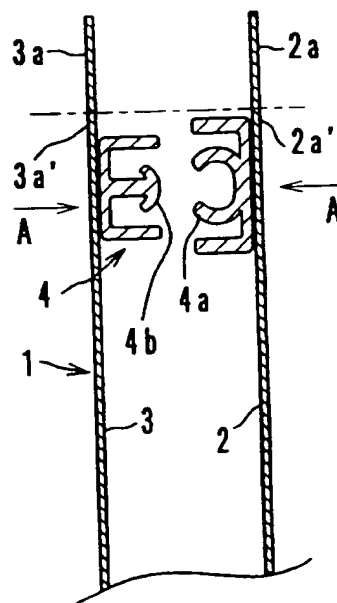
*FIG. 18 b*



*FIG. 18 c*

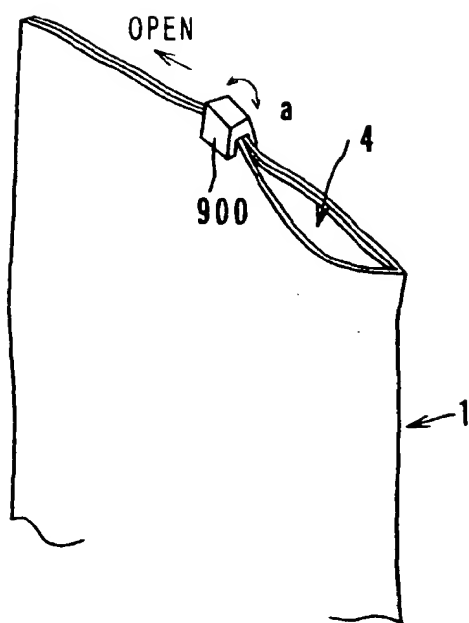


*FIG. 18 d*

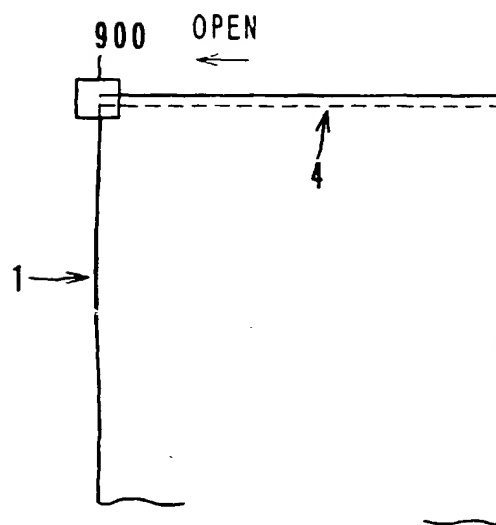


*FIG. 19*  
*PRIOR ART*

*FIG. 19 a*



*FIG. 19 b*





European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 99 10 3782

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 5 713 669 A (VANDERLEE DAVID G ET AL) 3 February 1998 * the whole document *	7	B65D33/25 A44B19/26
X	US 5 211 482 A (TILMAN PAUL A) 18 May 1993 * the whole document *	5.6	
A	AT 299 845 B (ASF GLEITVERSCHLUSS GMBH) 15 June 1972 * the whole document *	1-4	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D A44B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 June 1999	Examiner Pernice, C
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 99 10 3782

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